

**DEVELOPMENT AND PROBLEMS
OF
MUSICAL NOTATION
FOR THE BLIND**

by
Alexander Reuss

Translated from the German

by
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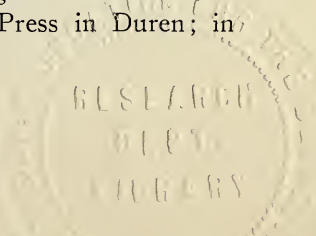
This monograph, "The Development and Problems of Musical Notation for the Blind," is the first of a series of monographic contributions to the literature on methods of the education of the blind.

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The Board of Managers hopes that the series may make a contribution to the field of the education of the blind.

The author of this monograph, Alexander Peter Reuss, was born on October 28, 1887, in Leipzig. He is the son of Andreas Reuss, director of an orthopaedic institute, and of his wife Mathilde, née Reise. The family is of the Catholic faith. His education from his tenth year on was in charge of the papal chaplain, Dr. utr. jur. Alexander Reuss, pontifical general vicar and canonicus in Trier-Mosel. From Easter 1898 for five years he attended the Royal Friedrich Wilhelm Gymnasium, and also spent some years as a pupil of the pontifical theological seminary in Trier. He benefited by the musical instruction of Peter Bohn and P. Haubrich who were violin teachers at the Cathedral School of Music in Trier.

In 1903 he became totally blind and spent two years at the local institute for the blind in Duren (Rhineland), where he received further musical instruction from Clemens Engels. This instruction was continued in 1906 by the organist, Martin Freisem, of Merzig (Saar); in 1907 he took up printing for the blind. In 1909 he established his own Braille Printing Press in Duren; in



1913 he transferred it to Strassburg i. e. and published both musical selections in Braille notation and worked on the theory of music. At the same time Dr. Reuss founded the monthly magazine for the blind, "Die Musikrundschaу," of which he is still the editor. Before the end of the war Dr. Reuss transferred his activities to Heidelberg, and in 1926 to Schwetzingen. In 1928 Dr. Reuss became a German delegate to the International Commission of Musical Notation for the Blind, in which he had been active earlier as a member of the German Commission of Musical Notation for the Blind. Dr. Reuss likewise served as a member of the Executive Committee in the Society of Blind Academicians of Germany e. V., Marburg (Lahn), et cetera.

In the autumn of 1928 Dr. Reuss took the entrance examination required for the study of the science of music at Karlsruhe and attended the University of Heidelberg during the winter semester of 1928-1929 in order to study,—in addition to the science of music,—German literature, psychology, and journalism. In 1929 he passed the "Latinum" examination in Mannheim.

The translators are grateful for the technical assistance of Miss Emile Hahn of the music faculty of the New York Institute for the Education of the Blind in the translation of the music terms and to Mrs. M. E. Frampton for assistance in reading the manuscript.

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Development and Problems of Musical Notation for the Blind

The history of notation for the blind—and, what is very closely related to it, the history of musical notation for the blind—is the history of the blind person's desire of his physical as well as mental powers for parity with persons having all five senses, and his desire not to be dependent on such persons. This history of writing reaches so far back into the development of mankind as to result in a "problem of notation *per se*."

There is no doubt about the existence of this problem; but it has existed only since notation came under the influence of mechanical devices namely, since the discovery of the art of printing books, since the beginning of modern times. In antiquity and in the middle ages, writing was not regarded as a problem solved by any one man; and, if the printing press apparently struck off the shackles of the mind of the last thousand years prior to its discovery and first made possible the complete expression of the personal note which characterises the Renaissance, it also, by the same token, dealt a blow to the unity of man, separated mental labor from him, and created something separate, behind which the personality of the creator was turned into a name, at least in the final expression of this development.

In earlier times man, still in possession of unity, employed writing almost solely as a memory aid, and of course also whenever this means served to transmit the written creation to others and to posterity. Writing had not yet destroyed the unity of man and his work, and this unity alone—not whether the creator committed his brain-children to writing or not—was the criterion for those round about him. The resulting situation was that the singer could sing his poetry himself, for in this way he first revealed himself as poet

and at the same time proved his connection with the world in which he lived and for which he created.

The blind person must likewise thank these circumstances which existed prior to the art of printing books for his place in the history of antiquity and of the middle ages. As yet there was no such thing as a problem of notation for the blind or musical notation for the blind. The attempts of individual blind persons to find aids for learning and representing the writing of seeing persons do not by themselves contradict this statement in any way. The natural tendency of the blind person toward poetry and singing was at no time less dubious, for also in the structure of normal man viewed collectively an understanding of and a natural tendency toward a "song and tale" were taken for granted to such an extent that the social life of man would have been interrupted if the inclination toward these things had been denied him.—And, if the blind seem endowed with a certain special talent or eminence in the field of music not yet separated from poetry, this results rather from their inability to enter other fields open to the individuals of that time than from the special talent which, then as today, only rarely makes certain favored ones stand out from the common herd, whether they be blind or sighted.

Just as the whole history of the middle ages is dominated and is marked by war-like striving for unity, so, too, was the cultural life of the individual dominated by this law of unity, and every person who did not or could not subject himself to it was excluded from participation in such a life. No doubt the social position of blind bards in the middle ages is to be traced back to this fact; these bards were by their blindness hindered from entering fully and completely into the society of their time, and consequently were regarded as wrongdoers, wanderers, buffoons, and beggars. With this membership, though in an association without members, so to speak, which was governed by its own special laws and lived on in a strong oral tradition, there grew—still stronger than for the contemporary normal man—the longing for a writing and means of transmitting writing, the need of which as a memory aid was not present. Yet not once was there demanded the recording of laws for these people standing outside the law, a development which for

the majority of the race transformed the old right of custom into written books of law (Saxony Speculum, Swabia Speculum).

So long as the Renaissance and the feeling for nature and the law of nature reawakened by it remained only "the rebirth of classical antiquity in its influence on science, literature, society, the life of the *aristocratic* circles," while "the development of mankind from the stagnation of the middle ages toward individual freedom"⁽¹⁾ took place only slowly and more in special fields than in ordinary life, so long did the relation of the blind man to those about him also remain the same as in the middle ages. It required a severe jolt from the outside, on the part of those blessed with vision, to remove him from the ranks of the unrighteous to the world of the righteous. This gradually extended to a world of the rights of man, which also belongs to the blind. The blind man desires some guarantee of these rights from mankind and from the state.

It was the period of enlightenment and the subsequent epoch of the French Revolution which gave the blind of Europe the rebirth still denied them by the Renaissance.

The system of pedagogy based on the fundamental ideas of Rousseau paved the way for the action of Valentin Haüy, who in 1784 discovered among the blind some persons capable of being taught. The example of the blind musician and composer Marie Therese von Paradis caused him to decide to make his first attempt at educating the blind (also by means of writing in Roman characters that could be felt), after his sympathy for and his philanthropic interest in the non-seeing had been aroused by blind street musicians of St. Ovide's market in Paris.

Here begins the history of that desire of the blind for membership in the society of those with all five senses and for freedom from dependence on them. Here, in the same way, begins the history of notation for the blind, which in its expression as point writing advanced and attained the last of these two ends. It merged

⁽¹⁾ See Burckhardt's "Die Kultur der Renaissance in Italien," fourth edition, Leipzig, 1885; and Biese's "Die Entwicklung des Naturgefühls im Mittelalter und der Neuzeit," Leipzig, 1887.

the blind as a preliminary step in their modern social mutual-aid organization, yet separated them again from the type of written intercourse employed by the sighted and from the notation of writing for the sighted. Both the notation of printed characters and musical notation for the blind have proceeded along different lines for a hundred years, lines which at present appear to have attained perfection as a preliminary step. Two facts must not go unmentioned here: prior to the age of enlightenment, even from the earliest recorded times of history, there has been an ever-increasing number of blind individuals who, in spite of their blindness, took their places among people having all five senses. These individuals have also in part created for themselves special aids for using the writing of the sighted. This subject has been sufficiently discussed in all the literature on the blind and had some meaning so long as we could consider the succession of lives of individual personalities as "history." But it deserves to be brought out that "the blind" have existed only since the work of Valentin Haüy and that such a thing as a notation for "the blind"—that is, practical symbols of general value for touch by hand, for the translation of speech—has existed only since his time. Only since then, too, have there been "societies for the blind"—as mutual-aid organizations of the non-seeing are termed today—which have recently been merged into a worldwide group.⁽¹⁾ This statement is not contradicted by the fact that even in the middle ages there occasionally existed an order of mendicant friars who were blind; such bands were always limited to the field of a single city and its environs.

Valentin Haüy (born on November 13, 1745 at St. Just les Marais, in Picardy) began his pedagogic activities in behalf of the blind in 1784. He was not influenced by the reference made by Erasmus of Rotterdam to the "Institutio oratorio" of Marcus Fabius Quintilianus⁽²⁾ (in which he reported that some blind persons had succeeded in writing by means of the table of Quintilianus) or by the book "Prodromo ovvero Saggio di alcune invenzioni nuove promesso all' Arte Maestra, opera che prepara il P. Francesco Lana

⁽¹⁾ The president is Monsieur Paul Guinot, 58 Bosquet Avenue, Paris.

⁽²⁾ *De recta Latini Graecique sermonis pronuntiatione* Basel, 1528.

Bresciano della compagnia di Gesu."⁽¹⁾ On the contrary, he imitated the methods of instruction customary among the sighted and for his teaching he used the writing of the sighted in the raised form.

At this time it does not fall within my province to trace the development of this writing and its final rejection in favor of point notation for the blind proper; later on I shall proceed to discuss further and especially the physiologic and psychologic problem involved by the very use of the writing of the sighted in raised form. Here I must confine myself to the remark that Haüy also employed the symbols of musical notation of the sighted in raised form for teaching music. In about 1817 Doctor Guillié stated in his "*Essai sur l'instruction des aveugles*": "Our method of teaching music is exactly like the one used for sighted persons, and all pupils learn both the first principles and composition et cetera by the same method as the one used at the Paris Conservatory. For how, indeed, would it be possible for them to have so good a sense of tempo and to execute morceaux d'ensemble so accurately if they were given merely a professional training? We have had the usual musical signs—such as notes, clef, rests, and all the other tonal symbols, which if they could not be rendered palpable to the blind, would have no value for them."⁽²⁾

A contrary viewpoint regarding the use of the musical notation of the sighted by the blind was defended by Simon Sechter in the "*Lehrbuch zum Unterrichte der Blinden*"⁽³⁾ where he says: "There is no idea in music which a blind person could not understand. The fact that he cannot make complete use of notes is no obstacle. It probably follows that until now there has mostly prevailed the idea that no true music can exist without notes, because until now there has not been felt the need of taking the trouble to express the rules of music so clearly and precisely in words that no notes would be required to make them intelligible. The sighted find notes too convenient to recommend their rejection; but one may be justified in declaring—a point which is very important for the musical in-

⁽¹⁾ Brescia, 1670

⁽²⁾ See A. Mell's "*Encyclopädisches Handbuch des Blindenwesens*," Vienna and Leipzig, 1900.

⁽³⁾ J. W. Klein's "*Lehrbuch zum Unterrichte der Blinden, um ihnen ihren Zustand zu erleichtern, sie nützlich zu beschäftigen und sie zur bürgerlichen Brauchbarkeit zu bilden*," Vienna, 1819.

struction of a blind person—that a complete course of musical instruction might be given without using notes.”

It was the confusion of the opinions as to whether musical instruction of the blind (and their further independent activity in music) was to be achieved with or without notes which first led to the brilliant invention made by the young Louis Braille. After the establishment of the six-point notation of letters (1825), Braille invented a corresponding musical notation for the blind which today is accepted throughout the world and has nothing in common with the ordinary musical notation used by the sighted. It is based solely on touch and on the possibility of so combining this principal form :: that all the requisite symbols can be represented.

Braille based his method on the point writing of the French officer Nicolas Marie Charles Barbier de la Serre (1767-1841). It is doubtful whether Barbier had been influenced by Lana (see above). Both inventors made use of point and relief for their notation for the blind. In 1803 there appeared a French translation of the “Prodomo” (see above), with which Barbier might have been familiar.⁽¹⁾ What Braille overcame was the confusion of the large number of points which the groping finger could not feel simultaneously in the systems of both Lana and Barbier. Barbier’s attempt to develop in addition a system of musical notation for the blind is reported by R. Kretschmer in his “Geschichte des Blindenwesens”⁽²⁾ as follows: “Barbier used a ruled sheet (“régulateur”) with a five-line music staff for representing musical notation in points. The points corresponding to the vertical numbering of the letters are put on the lines; the points corresponding to the horizontal numbering of the letters are put in the spaces in between, including the space above the top line. The character of this notation as a code can be enhanced by inserting all kinds of musical signs, giving it the appearance of a composition. Barbier gives several variations of this notation system and calls it combination writing [*écriture de combinaison*].

(1) Monsieur Coste d'Arnobat's “Essai sur les prétendues découvertes nouvelles dont la plupart sont âgées de plusieurs siècles,” Paris, 1803.

(2) R. Kretschmer's “Geschichte des Blindenwesens vom Altertum bis zum Beginn der allgemeinen Blindenbildung,” Ratibor, 1925.

Braille finally abandoned the five-line system still used by Barbier, and relinquished all secondary designs, such as those of Lana and Barbier, who stressed the code-like character of their invention. For him the criterion was only the system of a musical notation satisfying all requirements of notation. When we inquire into the measure of his success, we must give a little attention to the meaning of the musical notation for the sighted and see how far it has influenced six-point musical notation for the blind.

If, side by side, we place the same composition done in the usual (modern) musical notation and done in Braille, no one can tell at first glance that it is the same composition because they are so dissimilar. In both cases the symbols express both pitch and duration of tone by entirely different means, and yet in both cases the symbol and its form are based on the point (although in one case it is a matter of vision, and in the other a matter of touch). But notation for the blind does not show the sensory impression of the rise and fall of the melody by note-heads placed higher and lower, the distances between which are expressed by lines and guide lines. Here we have to treat with another form of notation, which seems non-sensory, that is, arbitrary to some degree in spite of the laws of development upon which it is founded.

Reasoning along this line at once leads us back to the tabulation dating from the seventeenth century, which used letters and numbers instead of the system of lines and note-heads. Braille does not represent the notes by letters (see below). His system of musical notation for the blind and the different tabulation systems have one feature in common: their rhythmic values are indicated by marks placed below the symbols or (in notation for the sighted) above the letters. Another common feature is the grouping of small note-values and the use of a symbol for the lines which mark the bars. However, Braille is not a letter notation of music, properly speaking. For, although the fundamental scale of Braille (in eighths) uses symbols which in written language indicate (other) letters (these letters are d, e, f, g, h, i, j), it does not use them because they are letters of spoken language, but because in true Braille this group of symbols offers the only possibility of creating other combinations (in fourths, halves, whole notes, et cetera by

adding one or more points). In musical notation for the blind, the pitch is indicated by seven clef signs which differ from both musical notation by means of letters and musical notation by means of lines of the sighted. These clef signs have nothing to do with letters but serve perfectly as "octave signs."⁽¹⁾ The transposition marks are analogous to those used in notation for the sighted, as are the accented notes, et cetera. The signs indicating the initial tempo and key as well as metronome directions are placed at the beginning of the piece. Indications for crescendo and diminuendo, ties, accentuation, and execution are not written above the notes but inserted in the musical text. Ornamental passages are as a rule placed in front of the notes in notation for the blind.

The essential characteristic of notation for the blind is the writing of chords. Of course, in music for several voices it is possible to use "voice signs" to represent the voices one after another as well; but chords of notes having the same value are written by means of the so called interval signs; there is one such sign for each second, third, fourth, fifth, sixth, seventh, and eighth. Thus we again approach musical notation by means of letters, like that formed⁽²⁾ as chord notation beginning with Gottfried Weber, although here the aim and the function are of a different kind.

But here we must emphatically point out the *fundamental* difference between the mensural or tabulation (letter) musical notation of the sighted and Braille notation as well as its predecessor and other attempts to create a musical notation for the blind.

Those musical notations for the sighted are primary in character; they are the visible expression of audible successions of tones and compositions. Musical notation for the blind, on the other hand, is secondary in character. Its chief aim is not to preserve original musical impressions heard but the transformation of visible

⁽¹⁾ Recent experiments on notation for the sighted made by Hermann Stephani (Marburg) form an analogy to this method of musical notation for the blind. Since 1905 Stephani has advocated that musical notation be limited to the G clef as the only clef (with octave marks). See Einstein's "Das neue Musiklexikon," Berlin, 1926.

⁽²⁾ H. Riemann's "Geschichte der Musiktheorie," second edition, 1920, page 509 et seq.

musical pictures into tangible symbols. The different, more or less successful attempts along this line to adapt the musical notation of the sighted for the sense of touch are the high lights of the history and the development of musical notation for the blind.

In such a translation of the musical notation of the sighted into the musical notation for the blind, the possibility that the sense of touch might take the place of the sense of sight was originally and naturally the first thought. Later on I shall discuss the real difference between these two senses with reference to the specific sense energy. Here, in connection with the present problem, I shall merely state that some blind persons themselves also believed first in the possibility of simple sense-substitution, because we have not only the blind—who cannot see at all—but also many others whose vision or sense of color is very poor. On the other hand, the blind may be classified according to whether they have become blind before birth or else before the conscious awakening of the sense of sight, or whether they have first lost their sight later through illness or injury.⁽¹⁾

If, therefore, the non-seeing themselves imitated the musical notation of the sighted, they did so because they believed it possible for one sense to replace another that had been strengthened by the recollection of sight and viewpoint of the sighted experienced at an earlier date.

Gradually at first, and after many obstacles to progress, the conviction was confirmed that the real problem of notation for the blind does not lie in the invention of symbols of tones and melodies—as is the case in musical notation for the sighted. But musical notation for the blind requires the actual adaptation of the already existing musical notation of the sighted for the sense of touch, keeping in mind at the same time the different purpose of the memorizing, and including the proviso that the touch system of musical notation for the non-seeing can be not only read but also written.

In the Braille point system of musical notation, then, it also

⁽¹⁾ See Alexander Reuss's "Die Sehvorstellungen der Blindgeborenen," in "Materialien zur Blindenpsychologie" (Neudrucke zur Psychologie, vol. 2), Langensalza, 1917.

actually concerns an adaptation of the notation of the sighted, and in all further consideration we must not lose sight of this purpose and this problem of musical notation for the blind.

Before taking up the details of the Braille system of musical notation in pursuing this consideration further, I must give a little more space at this time to the cultural and historic features underlying the origin of a musical notation for the blind. For, although the existence of "the blind" as a definite entity has been recognized only since the middle of the eighteenth century, "the blind" as something unique and also as a type have always existed. Their relations to music were so marked prior to the introduction of notation for the blind that "blind" (in the middle ages *orbis* meant *friendless* and *deprived*)⁽¹⁾ and "musician" were often synonymous. For that reason, too, we are justified in inquiring into the attitude of blind musicians of earlier times toward the musical notation of the sighted in use then and their reaction to its developments.

On considering the musical notations of different times and races from the viewpoint of comparative musical notation, we at once perceive not only a close connection in the further development of these efforts, but also a clearer law of analogy in the notation of words and of letters. All forms of writing have developed from man's social needs: first of all, in order to transmit news and views of individual human beings or groups of human beings far apart; secondly, in order to make a permanent record of events and thoughts, so that later they might be revived by reading or that they might be handed down to posterity.

⁽¹⁾ E. g., see Johannes Tinctoris. See Karl Weinmann's "Johannes Tinctoris und sein unbekannter Traktat "De inventione in usu musicae" (Regensburg and Rome, 1917), where (on p. 45) it is stated: . . . duos fratres orbos natione Flamingos, viros quidem non minus litteris eruditos quam in cantibus expertos, quorum uni Carolus, alteri Johannes nomina sunt. A. Schering, in his "Aufführungspraxis Alter Musik" (Leipzig, 1931), translates this passage as "The Orbus brothers," which rendering therefore does not seem correct, because Tinctoris later on in the sentence certainly makes special mention of the name of the blind men; family names and given names might therefore be separated from one another without rhyme or reason. In Tinctoris's report it is noteworthy that the two blind brothers are first called "litteris eruditi," a thing far more unusual in the non-seeing of that time than the "experientia in cantibus" which had long before been acknowledged as an attribute of the blind. (Tinctoris in this same passage speaks of different curiosities in the field of music).

Attempts to preserve musical melodies by committing them to writing satisfy the same requirements. In addition, at an early date appears the need to have musical conceptions reproduced in the presence of and under the direction of their composer or interpreter by individuals or by a chorus.

The notation of words was rather a writing of pictures transcribing whole sentences and words rather than a writing of individual letters, similarly the tonal notation of the West in the early middle ages. For instance, the Latin neumae do not yet have the meaning of melismae apart from words, therefore they do not signify individual tones composing melodies but rather signify phrases of melody which unite several tones in one rhythm. Here, as in word notation, we are able to establish the development from the picture to the letter or to the fixed single tone; for the signs of chironomia are likewise nothing but pictures, and, later on, simplified symbols of the way that a chorus leader waves his hands, by which singers are directed, as today children are taught by the movable-do system.

The form of the musical notation thereby fully answered the needs of the time. Even in late antiquity it caused the abandoning of the Greek-letter musical notation, which, strictly speaking, was a more faithful reproduction of music but was less suited to the use of songs in the Christian church. The new practice, whose musical tradition never disappeared, first combined these vague mnemonic devices—to form a rational system of musical notation.

Even this instance confirms the dictum: in every age and every organization the demand creates the supply (in this case, in the field of writing down songs).

If this law is applied to the invention and introduction of musical notation for the blind, no one will deny the possibility that a touch system of notation for the blind—in its different forms, mentioned previously and to be mentioned later—existed even in the earliest times. But even if a sighted person or a blind person had invented it in those days, it would not have been widely accepted, since no one needed it and no one suffered for lack of it.

For that reason the Greeks and other peoples were well acquainted with blind singers;⁽¹⁾ but this fact nowhere formed a

part of the theory of science or of special theories attempting to analyse the world of that period. If blind persons took part in the scientific research of that time, they had to express themselves through whatever medium was used by those with all five senses or they had to employ the assistance of someone who could see. Such a non-seeing person could naturally create mnemonic devices or even a system of writing based on touch for his own use, and this is what actually happened. Thus Didymos of Alexandria (308 A. D.) had someone make him a wooden alphabet and in that way learned to recognize letters and to form words and sentences by means of the sense of touch.⁽²⁾

In mediaeval times the blind as such were not allowed a part in the theory of science. (I have already explained, earlier in this work, why they were denied a part in civic life in the middle ages). And if blind persons did play a part in the musical research in the sense of having a place in the cosmos, they did so in the same way as in antiquity, although in the middle ages the principles on which music was taught were increasingly transformed into pedagogy, into the "septum artes." It was hard for the blind to have a real part in this development, for it was thought that the true musician "verus musicus" was not one who had completely mastered an instrument, but one who could understand and recognize the meaning of his art—a conception which prevailed from the time of Guido d'Arezzo up through all musical writing of the middle ages. Thus musicians fell into disrepute. As described above, the large majority of the blind belonged to this level of society if they had anything to do with music. They did not require a musical notation, for among musicians oral transmission and original creation long sufficed.⁽³⁾

(1) Homer's "Odyssey," VIII, 62. See also the representations of the blind Homer as a lyre player, with an assistant taking down his playing, pictured by Juseppe Ribera and Eoïse le Valentin (portrayed by G. Krasky in the "Katalog des musikhist. Museums" of W. Hoyer, Cologne, 2, 1912, pp. 399 and 417).

(2) See the *Kölnische Volkzeitung*, no. 775, 1897.

(3) See the following examples of this:

M. Brennet's "Les aveugles musiciens avant le XIX siècle," *Zeitschrift Valentin Haüy*, p. 3, 1901. *Acta Sanctorum*, 26, III; III, 647. *Vita S. Ludgeri*. *Acta Sanctorum*, 6, X; III, 303. *Miracula S. Fidis*. L. Rockinger's "Briefsteller und Formelbücher," Munich 1863, p. 164. (Pasaiocular).

Today, on the contrary, no blind musician can do without musical notation for the blind when he begins to study music and much less can he do without it in his professional career. The symbols of this musical notation for the blind were standardized by the decision of the international congress at Paris in 1929.

The announcement of the decision arrived at by this congress⁽¹⁾ almost coincided in date with the one hundredth anniversary of the invention of the modern international notation for the blind by Louis Braille.

As I said in my previous short statement, the raised-point notation of this blind French youth of sixteen proved the basis of a universal system for all blind persons in all lands. For the first time in history a notation for the blind permitted the representation of all letter-alphabets⁽²⁾ as well as of all symbols of musical, mathematical, and chemical notation.⁽³⁾

Here we are dealing purely with the representation of musical notation for the blind. Although Braille had clearly outlined his principles as early as 1829, its development was bound to be slow; he worked away for several years at its first outline until in 1834 he regarded his system as adequate. At his death, in 1852, musical notation for the blind had meanwhile barely emerged from that first rough form. But different modifications were already at that time beginning to spread when it was used by different nations. These modifications increased both its usefulness and the danger of growing confusion, since they stimulated fresh research.

The situation which had arisen in this way was markedly improved, when, in 1888, in international congress held at Cologne

⁽¹⁾ In this connection and the following see "Notation musicale Braille," Paris, 1930, a publication of the American Braille Press (printed for the blind).

⁽²⁾ It has recently been possible, for the first time, to represent syllable-writing (such as Chinese) by means of Braille symbols.

See "Beiträge zum Blindenbildungswesen," vol. 8, no. 83, October, 1930, Marburg a. Lahn, a publication of the Blindenhochschulbücherei (printed for the blind).

⁽³⁾ See "Systemurkunde der Mathematik—und Chemieschrift für Blinde," Blindenhochschulbücherei, Marburg a. Lahn, 1926 (printed for the blind).

(the sixth congress of teachers of the blind) led to an agreement among France, Germany (including Austria), England, and Denmark, thanks to which agreement musical notation for the blind was standardized for these countries.⁽¹⁾ It overshadowed all further separate attempts which threatened to obstruct international acceptance of the Braille system of musical notation. But at length the education of the blind striven for by the society of teachers of the blind reached the point where progressive blind persons were convinced of the growing inadequacy of the 1888 decision and desired its revision—especially with reference to the new problems of musical notation which they encountered in the scores of modern compositions. In 1912, therefore, certain blind experts in the field of musical notation for the blind in Germany, England, Sweden, and America began in earnest to discuss a further development of their musical notation.

In about 1922 all circles interested in the Braille musical notation for the blind were faced with a situation which was much like the one prior to 1888, when the head of the German Commission of Musical Notation for the Blind, a school-board member, A. Brandstaeter, who is still active today, made a plea for the uniform application of the Braille system.⁽²⁾ To be sure, in the meantime great advances had been made in the invention of musical-notation symbols still lacking at the time, but again people were far from a uniform comprehension of the system. For during the World War the aforementioned countries had gone their own way in expressing musical notation for the blind (with the exception of Denmark), and in the United States independent attempts at representation had been made.

A period of manifest indecision followed before an international agreement was reached. The old danger of splitting up into

⁽¹⁾ See Braille's "Musikschriftsystem nach den Beschlüssen des 6. Blindenlehrerkongresses zu Köln a. Rh. 1888," Berlin, Steglitz, 1888 (supplement in 1898).

See further "Notenschreibordnung nach den Beschlüssen des 14. Blindenlehrerkongresses," Düsseldorf, 1913.

⁽²⁾ See Dr. A. Blanchet's "Das französische Notenschriftsystem für Blinde" published by A. Brandstaeter, Berlin, Steglitz, 1876.

separate factions, which could if necessary be subdued, was again present, especially since in many countries efficient printers for the blind produced many musical works in Braille for commercial sale—each printer using his own system of Braille transcription.

In 1927 the difficulty of this situation moved the foreign secretary of the American Braille Press in Paris, Geo. L. Raverat, to support the cause of unified musical notation for the blind. He tried to have the European and American experts in the field of Braille musical notation get together personally, in order to ascertain whether it was possible to come to an agreement by which at least the symbols of musical notation for the blind might be standardized for the whole world. These efforts gave the impression that the complete standardization of the methods of notation, too, would be premature.⁽¹⁾ They therefore decided to defer the discussions on the latter and to confine themselves to the investigation and the standardization of the symbols of musical notation for the blind.

At the beginning of 1929, after two years of uninterrupted work, Raverat was able to announce a congress of experts in the field of musical notation for the blind as the result of numerous personal talks and many trips through Europe and America. This congress was scheduled to be held in Paris in the spring of the same year under the auspices and in the quarters of the American Braille Press for War and Civilian Blind, Inc.

The following countries were represented: France, Germany,⁽²⁾ Italy, the United States, and Great Britain. Nine other European and South American countries had expressed their willingness to abide by the decisions of the Paris conference and in the future to use the new standardized form of Braille musical notation.

⁽¹⁾ I make quite a distinction between the symbols of musical notation for the blind proper—that is, the individual signs for notes, rests, intervals, ties, ornamental passages, et cetera—and the methods of notation, in which the use of these signs is possible, as for instance division of pieces of music into sections, separation of the pages (the Claver method), transcription bar by bar, transcription bar above bar, and so on.

⁽²⁾ The German delegates were Chief Instructor of the Blind Fritz Czychy, of Königsberg Pr., and Alexander Reuss, publisher of literature for the blind, of Schwetzingen.

In April 1929 the congress met with Raverat as president; his leadership (because he was the only layman there) guaranteed complete independence to the individual experts. The sessions lasted from April 22-29, 1929. In the final report of the British secretary, Watson, it is stated: "The work of the congress was, happily, crowned with success. We succeeded in carrying out our difficult task with harmony and broadmindedness, all being united in a common effort to lay aside prejudices and to understand opposite viewpoints, for the sole purpose of arriving at what will later on appear as the true solution of the great problem submitted to us, namely, the unification—on a scientific basis—of the symbols of Braille musical notation in use among the blind of the whole world."

The decisions reached at the Paris congress were ratified by the authorized commissions in the individual countries represented:⁽¹⁾ in France on May 30, 1929; in Great Britain on June 17, 1929; in Italy on July 20, 1929; in Germany on August 12, 1929;⁽²⁾ and in the United States on November 1, 1929.

In the opinion of the congress the standardization of the methods of representation or transcription was a secondary consideration as compared with the standardization of the individual symbols, and this was the guiding motive of the work of the experts in Paris. However, it is debatable whether this idea can guarantee the hard-won universality of musical notation for the blind, and whether in a general way the Braille musical notation fully and permanently satisfies the needs of the blind and the requirements of a musical notation.

We shall take up the solution of these problems when we investigate the "problems of musical notation for the blind". Here we must for the last time glance at the period before Braille, in order to find out how the blind adapted themselves to the presence of a musical notation prior to the invention of the raised-point no-

⁽¹⁾ In Germany (including Austria) by the permanent Commission of Musical Notation for the Blind, headed by schoolboard member A. Brandstaeter, of Königsberg.

⁽²⁾ The works of the German delegates to the Paris congress and of the German Commission of Musical Notation for the Blind (see previous footnote) received final approval from the third congress for the welfare of the blind (twenty-first congress of teachers of the blind) held in Nuremberg in August of 1930.

tation. Moreover, we must ascertain how the publishers of literature for the blind (hence not only institutions for the instruction of the blind) took advantage of Braille's invention after 1829 and what other attempts are now being made to employ Braille for musical notation (e. g., for the movable-do system).

The mistake of regarding "blind" and "musical" as synonymous originated because the blind person more than the sighted person is forced to imitate and to take advantage of all aural impressions—as well as musical impressions—,while many talented persons among those having all five senses are through circumstances of life and the accompanying choice of an occupation prevented from developing their musical abilities. Today, accordingly, the unity of the man of the middle age has been lost. In modern times, too, blindness per se naturally requires no special inclination toward music, and there are certainly proportionally blind persons as sighted persons who are without a taste for music.

What the blind person mastered as well as the sighted person, from the earliest times, from the beginnings of human culture, was speech. But, from what we can still imagine about it today, music as primitive song was bound up with this power of instinct. It was a primitive entity, which was split up during the later development at one period, after which speech (words) and music (song) continued as separate manifestations of one and the same instinct, while in art they constantly united in new and happy ways.

R. Kretschmer writes in his "Geschichte des Blindenwesens":⁽¹⁾ "For blind persons who had a gift for music and recitation, singing and playing as well as the recital of their own poems or others' poems were from the earliest times a means which enabled them to remain independent of outside help." The musical notation of the sighted did not play a prominent part in these earliest times, music being in the main transmitted by mouth and from race to race. Neither in the old days did a blind person have to yield to a person with all five senses. Among many races (especially Oriental ones) music was conceived especially as a matter of inner experience, in contrast to the outer form, which was a secondary consideration.

⁽¹⁾ R. Kretschmer, l. c.

To this very day, also, the blind musician who depends on memory alone for learning his repertory of melodies is not rare in China and Japan.

The relation between blind musicians and sighted musicians was of a different order when music developed into something so complicated that musical notation could no longer be dispensed with for the preservation of musical conceptions. Standardized performance of musical compositions consequently no longer depends mainly on the musical power of imagination of the performer, but embodies the musical ideas and aim of the composer. It is not astonishing that in this development the blind person could make no progress. In general he remained an improviser. "Printed books replaced wandering minstrels, at an earlier date in some countries, at a later date in other countries, depending on the progress made in culture in each country. The musicians who could see became professional musicians. The musicians who could not see sank to the level of street musicians and beggars. They played for dances, weddings, and other festivities; they sang the ballads of ballad-singers; they improvised and related tricks played by rogues and tales of bandits. Occasionally privileges protected them from competition. In Spain, up to the revolution of 1868, only the blind could sing and recite in public."⁽¹⁾

So long as there was no musical notation for the blind in relief, there could be no successful attempts to regain the advantage which the seeing musician had over the blind one. Because of this advantage the latter was barred especially from the church. What was invented prior to the eighteenth and nineteenth centuries for the representation of music and for the comprehension of this representation through the sense of touch (some instances are given in J. Wolf's "Handbuch der Notationskunde", II)⁽²⁾ is not to be regarded as notation proper but as a memory aid. In their cruder forms these attempts remind one rather of the familiar knots tied in a handkerchief than of the Quipus of Peruvian Inca mentioned by Mell.⁽³⁾ The more highly developed forms are imitations of

⁽¹⁾ R. Kretschmer, l. c.

⁽²⁾ Johannes Wolf's "Handbuch der Notationskunde," II, Leipzig, 1919.

⁽³⁾ A. Mell, l. c.

the writing of sighted persons whose symbols have after long development been adapted to the eye, and therefore no worse touch system could be conceived. At best, therefore, it is here a question of a so called ingenious memory system, of which Kant in his "Anthropologie" says that it is absolutely preposterous and inappropriate, since, according to him, two or more arbitrarily connected kinds of ideas instead of one must be inculcated.

However, it is of interest to ascertain once and for all, so far as is possible, the attitude of the more important blind musicians to the problem of the notation of their own compositions, before the time of Louis Braille and his invention. For, although with the creation of the musical notation of the sighted—especially since the time of Guido d'Arezzo, about 1030—or more generally of mensural musical notation, the blind man without any notation of his own was increasingly forced into the guilds of the itinerant singers. In the last thousand years before the invention of the Occidental notation for the blind there was a group of important blind persons who in spite of their blindness entered the field of the art of music and its development, and could achieve importance as well as their sighted fellow-beings in the same profession.

One of the most famous and most influential blind persons in the ancient history of music is Francesco Lancino (1325-1390), of Florence. We do not know how Lancino committed his compositions to paper. Presumably he composed them in his mind or with an instrument (he is supposed to have greatly advanced the construction of keyboard instruments) and dictated them to someone who could see.

Neither is it known how Conrad Paumann (middle of the fifteenth century) achieved the notation of his "Fundamentum Organisandi," or how the Spaniard Francesco Salinas (1512-1590), who independently continued Zarlino's system of instruction, accomplished it by himself. But in his famous work "De musica libri septem" there is a definite reference to the primary function of hearing in the laws of harmony and of rhythm.

This primary function remains the chief basis of musical activi-

ty, of cultured blind musicians of the following centuries, too, and even today the musical urge in musically inclined blind persons is so strong that they decline the aid of notation for the blind—with its accompanying limitations in the notation of polyphonic and orchestral passages—and resort to dictation of their musical conceptions. Thus, in recent years, the blind composer Hubert Pfeiffer (Wuppertal-Unterbarmen) has composed several great orchestral works and has had them written down on music paper by his pupils; one such work was his mass for full orchestra, soloists, and chorus, which was first conducted in 1930 by Hoesslin. On the other hand, even today there are also skilled musicians (such as the notable organist Ferdinand Schmidt, in Düren) who similarly decline to use notation for the blind as an aid in memorizing new compositions and rely solely on their musical memory; they have accordingly learned their repertory by playing over and over and add to it constantly in the same way. But such a use of the inner sense of music always presupposes a certain familiarity with the musical notation of the sighted—with its laws of transposing notation, enharmonic notation, and other kinds. Unless the person copying the music at the time is so thoroughly in harmony with the world of music of the blind person that he (the copyist) performs this part (not always easy) of the work independently, or unless the person who is memorizing by ear is to lose the orthographic sense and with it often, too, the continuity of the piece to be played.

John Stanley (1712-1786) of London employed a music copyist who turned into musical notes what Stanley played on the harpsichord. He was the first to undertake the memorizing of long orchestral and choral compositions of others, for he conducted Händel's "Messiah" annually for almost a decade with the help of a large society of artists. (In the past year the blind musician Richard Effert, of Munich, likewise conducted the "Messiah"; but for it he used a score in relief, whose notations were adapted to the Braille system of musical notation).⁽¹⁾

⁽¹⁾ See the monthly magazine "Die Musikrundschau," the organ of the Group of Professional Blind Musicians of Germany, published by the Reichsdeutschenblindenverband, Berlin, Schwetzingen, 1931 (printed for the blind)

As previously said, there could be no successful attempts to regain the advantage which the sighted musician had over the blind one in his musical notation while there was no handy musical notation for the blind in relief. Of course, J. Ph. Rameau in his work "Code de musique pratique"⁽¹⁾ had already attempted to use wooden and metal type as notation for the blind. This type was to be fastened to a raised five-line system, but there is no record of a practical realization of this invention. On the contrary, Marie Therese von Paradis at the court of Marie Antoinette in Paris or in her native city of Vienna attempted, prior to the invention of general notation for the blind, to write down her compositions in the musical notation of the sighted by means of a table invented by her. Yet these attempts remained wholly incomplete, since it was impossible for the blind woman composer to reread her own compositions or to transcribe the musical works of others into it in the usual way.

Diderot, in his supplement to his "Lettre sur les aveugles",⁽²⁾ says of the blind Mademoiselle de Salignac that her teacher cut out the notes for violin playing and pasted them upon paper for her, so that the blind woman could commit simple pieces to memory or refresh her memory of them without help.

The complete solution of the problem of a musical notation for the blind arising during the age of enlightenment, a notation which could be written and read by the blind themselves, was the first attained after Valentin Haüy in France, Johann Wilhelm Klein in Austria, and Zeune in Prussia had done so much to advance the education of the blind, that a universal notation for the blind could be introduced into general practice.

As Brandstaeter relates in full in the above mentioned "Encyklopädie des Blindenwesens" of Mell, Valentin Haüy had raised notes made for his first blind pupils. Johann Wilhelm Klein, in

⁽¹⁾ J. Ph. Rameau's "Code de musique pratique ou méthodes pour apprendre la musique, même à des aveugles," 1760.

⁽²⁾ D. Diderot's "Lettre sur les aveugles à l'usage des voyants," London, 1749. Translated into German by Alexander Reuss, Marburg, Lahn, 1926 (Blindenhochschulbücherei, printed for the blind).

his "Lehrbuch zum Unterricht der Blinden"⁽¹⁾ explained how to make the ruled paper for Haüy's method of representation and how the printing with type was to be carried out. But for the personal use of the blind he describes a new system of musical notation. The notes are copied in Roman characters—or in combinations of dots for those who have not learned to read linear letters (letter notation for the sighted)—and written in relief on paper. Every note written in this way was pasted upon a slip of paper, which had a special form corresponding to the value of the note. If the slip had no note pasted upon it, it meant a rest. The pitch of the note was indicated by fastening these slips above or below an embossed line.

Guadet's ⁽²⁾ magazine "L'Instituteur des aveugles" contains the description of a musical notation devised by Mahony of New York, which used Roman capitals, numerals, and arbitrary linear symbols, as well as Guadet's own system, which used different kinds of writing instead of capital letters.⁽³⁾

But later Guadet worked for the general acceptance of the Braille system of musical notation, and it is precisely due to his activity that it could be achieved in so short a time. I made earlier mention of the path followed by Braille, with his notation. A clear account is given, inter alia, in J. Wolf's "Handbuch der Notationskunde"⁽⁴⁾ and in the same author's "Die Tonschriften."⁽⁵⁾ After the invention of the general six-point notation for the blind by L. Braille and its acceptance first in France, Moncouteau, a former student of the Paris Institute for the Blind, devised for himself—as further related by Brandstaeter, l. c.—a musical notation in which he used the first thirty signs of Braille's letter-alphabet to indicate musical notes and—underneath them—the first eight Braille letters to indicate value. However, even after many changes, the system did not meet with Braille's approval.

To quote Brandstaeter, in Mell's "Encyclopädisches Handbuch

⁽¹⁾ Johann Wilhelm Klein, l. c.

⁽²⁾ "L'Instituteur des aveugles," Paris, March, 1856.

⁽³⁾ A. Mell, l. c., p. 527.

⁽⁴⁾ Johannes Wolf, l. c.

⁽⁵⁾ Johannes Wolf's "Die Tonschriften," Breslau, 1924.

des Blindenwesens," l. c.: "Don Gabriel Abreu, teacher at the Institute for the Blind in Madrid, likewise used Braille's alphabet to form a musical notation, but based it on the figure of twice four points in a rectangle. A system composed of lines and points was created by Don Pedro Llorens y Lichos, music teacher at the Institute for the Blind in Barcelona.⁽¹⁾ However, all systems invented up to that time were surpassed and finally supplanted by the musical notation brought out by Braille himself to supplement his point-alphabet. Braille's musical notation—thanks to its improvements and to additions to it in the course of time, particularly to the international agreement regarding its form reached at the congress held at Cologne a. Rh. in 1888—⁽²⁾ has become the generally prevailing system and has even won out over the Wait system,⁽³⁾ which had been accepted in America. Unfortunately, Braille's system of musical notation has made its way in Germany, as well as in other countries of Central Europe, very slowly and tardily. Until 1876 there was not a single example of it in German. Indeed, it is owing to this circumstance that in the aforementioned countries the teachers of the blind were still working on a way to produce systems of musical notation in the sixties and seventies, after the need for such a system had been manifested in their field of activity. — Here belong the following systems: the Öhlwein system, Weimar (1867), which used Roman capitals for musical notation; the first Petzelt system, Vienna (1868), which selected a special Roman character for each tone of the chromatic scale; the Warsaw musical notation system (1875), which employed Roman capitals combined with punctuation marks; and the second Petzelt system, Vienna (1877), which used lower-case Roman letters exclusively to indicate tones, note values, and rests. In 1877 a music teacher of Munich, E. Krähmer, attempted to modify Braille's system while he was work-

(1) "L'Instituteur des aveugles," Paris, April, 1858.

(2) See previous account.

(3) The Wait or New York system of musical notation is a point system which does not, as Braille's system does, have three points above, but only two; but it is expanded horizontally and presents signs three or four points wide. A detailed account of this system has the title: "The New York system of tangible musical notation and point writing and printing for the use of the blind by William B. Wait," New York, 1873.

ing out a point system for letter notation; his letter notation adhered to Braille's plan (twice three points in a rectangle), but for his musical notation he adopted the plan of twice four points running vertically. In 1892 the Abbé Goupil of Chambray, in Tours, invented a new musical notation for the blind which was quite independent of Braille and consisted in combinations of dots and dashes; because of his determination to make Braille's system appear as without practical advantage it will never succeed."

Earlier in this article I gave a detailed account of the course of the history of Braille's musical notation for the blind following the Cologne meeting of teachers of the Blind. But what advanced musical notation for the blind more than all the pains taken by its inventors was machine printing, which kept abreast of the technical progress of the whole nineteenth century. It may even be thought that one or another of the systems of musical notation for the blind employing both dots and dashes to form relief which I have mentioned above and briefly outlined, would have competed with the Braille system, had not the mechanical stamping of combinations of points been the easiest thing in the world, especially in L. Braille's grouping. Hence it is obvious that the sense of touch—or rather the sense of pressure, which is the only one involved in the reading of notation for the blind—more readily distinguishes the meaning of points and their combinations than of lines or else the grouping of dots and dashes. The real advantage of the point-alphabet is that blind persons can more easily write in it and that many copies can be printed.

If a musical notation for the blind is to answer all needs, or at least those whose fulfillment is possible, it must likewise possess three properties: it must be easily read by the blind without ambiguity; it must be thoroughly suited to the purpose of memorization; and a blind person must be able to write in it himself. The first and the third requirements could not be satisfied by the systems which used merely lines or a combination of lines and points (see above), quite apart from the systems which gave the non-seeing person only writing or only the reading of writing (Paradis, Salignac). Later we shall come back to the suitability for the requirements of

a memory aid in connection with the difficulties of the system itself. Such difficulties are present; yet the Braille system of musical notation, because of its superior qualities, forged ahead of the above systems, and the publishing activity of presses for the blind became directly related to the requirements of blind musicians. The printers for the blind soon learned that both letter notation and the six-point system of musical notation for the blind were technically easier to print than all other systems. The easier method of production made larger editions of books and music possible; and thus reawakened interest on the part of the blind—and especially on the part of blind musicians. Their greater demand for such works created a business boom, which has not been brought to a standstill by the economic depression of today.

There had been printing presses for the blind even before the French revolution.⁽¹⁾ They printed the symbols of the notation of the sighted in relief (see above). However, it was clear that, after the introduction of the Braille point system, music for the blind was not produced on a larger scale until after the agreements of the oft-mentioned meeting of teachers of the blind at Cologne in 1888, after the symbols and methods of transcription had been made uniform. The greatest activity in producing music printed in Braille for the blind occurred in the following countries: France, first, with the presses of the Institution des jeunes aveugles, of the Frères de Saint-Jean de Dieu, of the Soeurs de Saint-Vincent de Paul, and of the Association Valentin Haüy. England, with the large press for the blind of the British and Foreign Institute for the Blind (now the National Institute). Denmark, with the publishing house of the Royal Institute for the Blind in Copenhagen. Austria, with the publishing house of the k. k. Blindenerziehungsinstitut in Vienna, et cetera. In Germany it was particularly the Society for the Advancement of Education of the Blind in the then

⁽¹⁾ See de la Bractéole's "Eloge philosophique de l'impertinence," translated as "Rokoko" by Rud. Pechel, Berlin, Leipzig, Vienna, and Stuttgart, no date given: "Good day, fair ladies, I am on my way to the printing press for the blind." "The printing press for the blind? How unique! How charming! How priceless! How wonderful! Let us all go with you! My carriage will follow us. There is no trip that I would not give up for so rare an event!"

Royal Institute for the Blind at Berlin-Steglitz (now in Hannover-Kirchrode) which gave publicity to the decisions of the Cologne congress in a "system of musical notation for the blind" (printed for the blind and for the sighted) and as a supplement published "The primer of musical notation for the blind." In addition, great service was rendered at first by the Kull Press for the Blind (Municipal Institute for the Blind, Berlin)⁽¹⁾ and other presses of institutes for the blind (Düren, Illzach b. Mülhausen i. E.) in the matter of the technical improvement of the printing and the publishing of music in notation for the blind.

At first the Braille point notation was printed on one side with type. This method of printing from type has so far continued side by side with printing from plates in France and has consequently been so perfected that printing on both sides by inserting negative points has also become possible, but it does not always give very clear-cut raised images. The latest improvement in type-printing for the blind in Braille is a method used in Belgium. In it the type bearing points is made in two parts—that is, the six-point form is divided lengthwise into two halves, which can also be inverted at will—, so that only five kinds of type and the requisite spaces need be cast in order to produce all 63 combinations of the Braille system of point notation.

But the disadvantage of these methods of printing with type is that the type must be unset again after one edition and must be reset for a second edition, should the latter be called for. At the end of the eighties in England and Germany, this led to the stamping of zinc plates and tin plates (other materials, too, were tried out, such as brass and aluminum), which were peculiarly suited to taking and giving back a clear impression of the raised point. Such thin plates could be stored without trouble and could always be used again for a new edition. In spite of their stereotyped character they can be corrected and—since they are used as double plates (the stamped point goes through two tin plates superposed and fastened together at one side in order to produce patrices and matrices in one step)—furnish, by an ingenious method of transcribing the grouping of points, the

⁽¹⁾ Now at 26 Adalbertstrasse, Berlin O 26.

so called two-sided printing between points, which guarantees that full use is made of any space on both sides of the printed sheet. Special stamping machines (in Germany, the Hinze machine put out by the Auerbach Company, of Berlin) enable blind persons, too, to do this printing without the aid of others. A blind person uses his free left hand to feel the article to be printed from a previously prepared manuscript or (if the text is in longhand) takes it down from oral dictation.

A further improvement, which, however, has not proved popular, is the so called "plateless method of the German Central Library for the Blind in Leipzig." Mrs. Marie Lomnitz-Klamroth; is the director of the abovementioned lending library and renders great service, but we cannot go further into the subject here. To a certain degree it combines the advantages of printing from type and stereotyping from plates by means of a stamped paper stencil.

The printing from tin plates favored especially in Germany and England gave considerable impetus to the printing and publishing of musical notation by institutes and private blind persons. In Germany the greatest services were rendered especially by the blind publisher F. W. Vogel, of Hamburg, through the publication of all kinds of music in notation for the blind. After his death the plates of his publishing house were turned over to the Society for the Advancement of Education of the Blind in Hannover-Kirchrode. The following also deserve mention: the G. Bube Publishing House, Berlin (blind); and A. Reuss, Schwetzingen (blind), who founded "Musikrundschau" (a monthly magazine, which started in 1913) and, inter alia, printed an edition of Gregorian chants as well as works relating to the science and theory of music.

The press of the Blindenhochschulbücherei in Marburg-Lahn has also been of service in publishing works on the theory and teaching of music. But the declining buying power of blind musicians and music-loving blind amateurs following the World War prevented the presses for the blind, with few exceptions, from producing works on a strictly commercial basis, and so the publication of music printed for the blind threatened to come to a standstill. In contrast, the need of the blind for music had increased every decade, for the institutes for the instruction of the blind had in-

creasingly learned that not only is music, in addition to speech, most accessible to the blind, but that music can also be a profession and means of livelihood for the musically gifted blind. Thus there were trained more and more blind piano instructors, organists, soloists, and drawing room music artists (as well as piano tuners), whose need for music and works on the theory of music could not be filled by the different lending libraries for the blind (Hamburg, Leipzig, Marburg, Breslau, Nuremberg, Cologne, et cetera). The archives of these libraries were well able to quickly furnish a blind person with separate pieces of music—which he had to learn by heart in a hurry and then return—, but they did not satisfy his need for music of his own—standard works and textbooks—which he could always have at hand and use constantly.

In Germany this evil was remedied so far as possible by forming the Music Supply Centre for the Blind in the "Credit Bureau of Public Mutual-Aid Organizations of Germany" (3 Monbijouplatz, Berlin N. 24), in which representatives of the large German federations for the blind and societies for the welfare of the blind as well as private presses joined under the leadership of the "Kageso." These groups furnish the wherewithal for supplying blind musicians with the requisite musical material in point notation. This supply is made possible in two ways: first, music printed for the sighted is transcribed by hand into point notation in the case of works not in general demand; secondly, works of importance for all musical circles are printed in notation for the blind. The music transcribed by hand can be lent for a longer period or can be bought on the market. The price of the transcriptions is so moderate that it corresponds to the price of music printed for the sighted.

It is debatable whether the desired end has been attained by the publishing activities of the different countries—which recently include America and Italy. These activities are especially furthered by the printing of music by the American Braille Press of Paris; enabling all blind musicians of all countries to independently have access to the musical creations which have become fundamental for and indispensable to music in general.

The activity of blind musicians in earning their living required a large number of reference books corresponding to the requisite

reference music. At first this need was not given sufficient consideration. Rather, the first presses printed mainly classical pieces.—They began with the harpsichord and organ works of Johann Sebastian Bach and the Sonatas of Haydn, Mozart, and Beethoven and included works of Schumann and Brahms. Neither were classical etudes lacking (Clementi, Czerny, Cramer, and Chopin). But the blind musician could not always make his way with this “lofty” music. Even the increased printing of the few available dances (“Tanzalbum” of Düren and others) and of pieces of drawing room music (Paris, Hamburg) was not calculated to make him so professionally superior that he could successfully compete with his fellow-worker who could see. Thus the blind only gradually came to professionally perform *drawing room music*. Bube’s publications and recently those of the Viennese Society of Printers were the first to better satisfy this need.

But also the other part of the publications—the classical and the romantic music of the eighteenth and nineteenth centuries—did not appear systematically, and so on the one hand there were serious deficiencies which are still present. On the other hand, a single publication might be printed twice—at home and abroad—, which was often an unnecessary waste of money and labor if the same publication in notation for the sighted had been used.

An attempt to remedy this evil is being made by the Information Bureau of the German Libraries and Presses for the Blind of the Society for the Advancement of the Blind in Hannover-Kirchrode. In the future the American Braille Press (Paris) will act as intermediary along the same line in the international printing of music, and one of its chief problems in the coming years will be the solution of these difficulties.

It still remains an unsettled question whether it is possible to agree on an international plan of printing which fills the above mentioned gaps in the musical literature of the blind and at the same time answers all daily needs. The committees of the World Congress of the Blind—to be held next year under the auspices of the League of Nations at Geneva—are working for this end.

The solution of this problem is made even more difficult by

the situation which still exists. While the decisions of the 1929 Paris conference unified the symbols of musical notation for the blind (see above), the methods of representing them still differ in the various countries.

In Section XVII of "Notation musicale Braille"⁽¹⁾ it is stated (§111): "The Braille system of musical notation does not exclude score arrangement, but the musical text thus presented takes up a good deal of space and is not always readily identified by touch.— Before listing in turn the different ways of presenting musical texts, it is well to point out that, even if none seems to combine all the advantages, one of them may be better suited to a certain type of music depending on the structure of a piece."

This difference in the methods of representation is of decisive importance for the future course of musical notation for the blind. Meanwhile, before we enter further into the subject, we must glance at Braille's musical notation itself. We should consider how its symbols were established in Cologne in 1888 and in Paris in 1929 for the blind of all countries.

Let us begin with the Braille alphabet notation. To repeat briefly here what I have said before, it is a pure touch system of notation using the scheme :: (the six-point form). The practice before the time of Braille (see above) and more scientific research since his time have shown, that the range of touch of the fingertips of the right or left index finger (reading is preferably done with this finger), or rather, that their sense or pressure cannot make them aware of more than six points *at once*. Therefore, if, as has been tried by various non-Braille attempts, the number of points were increased to obtain any improvement whatsoever in the system, the sense of pressure could no longer grasp the whole symbol and the advantage of the really clear impression of touch, and with it smooth reading, would be lost.

The arrangement of the six points of the Braille system is an *upright* rectangle in which three pairs of points are superposed upon one another. In order to distinguish the individual points by numbers, the rectangle is now (England was formerly an exception) generally split up into two halves, each of which contains

⁽¹⁾ 1. c.

three points superposed upon one another: the left half contains points 1, 2, and 3; the right half contains points 4, 5, and 6.—By means of this numbering all symbols can be transcribed without their having to be represented concretely by the actual symbols of point notation (a thing not always easy in printing for the sighted). Hence the sequence of numbers 1 2 3 4 5 6 signifies the complete six-point form, number 1 the letter A, number 12 B, number 14 C, number 145 D, number 15 E, number 124 F, number 1245 G, number 125 H, number 24 I, number 245 J, et cetera.—There are sixty-three possible combinations, all told.

Since the letters of the alphabet, the diacritical marks, punctuation marks, and certain auxiliary signs do not always exhaust all available sixty-three symbols, it was thought that—since notation and consequently books in notation for the blind take up a lot of room—frequently occurring combinations of letters might be represented by contractions or abbreviations. In addition to this process the system of single letters and groups of letters indicating likewise abbreviations of words for the purpose of reproducing frequently occurring words. This was somewhat in the manner of the ancient Tironian notes, or similar to the arrangement of the sigla in shorthand. Thus, in the German notation of reading for the blind, the point combination 16 means the diphthong au, 126 means eu, 146 means ei, et cetera; in standard German shorthand for the blind, 1 by itself means “aber” (but), 12 means “bei” (in), 14 means “sich” (oneself), et cetera.

Let us now consider the fact that the symbols of the Braille point notation are composed of different groups of combinations of points, which are definitely related to one another; and indeed there are five groups, each having ten “regular” signs apiece; a sixth group has six signs; and a seventh group has seven “irregular” symbols. Group A (that is, the first group) uses only points 1245, hence the points of the two upper pairs; group B repeats the ten signs of the first group, but sometimes adds point 3 to them; group C employs the same method by adding the points 36; and group D likewise adds the ten signs of group A, while it sometimes adds point 6 as a distinguishing mark. Group E places the symbols of group A in the lower point forms (2356) of the

complete six-point form. Group F is composed of those combinations which are possible by using point 3 and the right half of the system. And, lastly, group G takes in the combinations which can be grouped together only by means of the right half of the system:

I had to discuss the nature of the Braille system in such detail because without this explanation it would have been impossible to discuss the Braille system of musical notation for the blind.

All musical symbols of a linear system of notation for the sighted are, in notation for the blind, written consecutively, but never above or below one another. This peculiarity signifies, in addition to "interval signs" for representing notes played at the same time (chords), the main difference from the method of notation used by the sighted. We return to this fundamental difference once more when, lastly, we mention the "Leipzig system of musical notation." This system has been rejected by both the German "Standing Committee on Musical Notation for the Blind" and with few exceptions, nearly all musicians. It results from the demand for continuity of the text by the groping finger, which must not be expected to follow vertical and horizontal notation at the same time. In discussing methods of representation, we shall have to ascertain whether an exception to this rule is desirable in certain cases, i.e. (in examples of harmony).

Braille uses the last seven symbols of group A of his system to represent the seven tones of the scale in eighth notes or quavers (see details below). At first glance this might seem impractical and it has met with objections also on the part of amateurs who were trying to develop new systems of musical notation in points, since the result is that the names of the notes are shifted one place from the meaning of the letters. In other words, the eighth or quaver note C means the letter d, the eighth or quaver note D means the letter e, the eighth or quaver note E means the letter f, et cetera. But fair warning is given that these symbols of musical notation must not be compared with those of letter notation. In reality, groups of points are concerned in both, and they admit of no comparison, since each forms an independent system, which therefore have no meaning in common. If the aforementioned objections were sustained, all musical notation for

the blind would have to abandon the point and groups of points adapted to the tactual sense, since in the Braille letter notation and in shorthand for the blind all signs of musical notation have a different meaning that cannot even be compared.

As stated, the last seven symbols of group A designate the seven tones of the scale c d e f g h in eighth-notes or quavers. The same symbols of group B give the fundamentals as quarter-notes or crotchet; those of group C give them as half-notes or minim halves; and group D gives them as whole notes or semi-breve.

A combination of whole notes and signs of groups F and G permits also the representation of breves (the "brevis" of the old mensural notation).

The same symbols are used for sixteenth-notes or semi-quavers as for whole notes, that is, the last seven symbols of group A. Confusion is impossible, since the number and groupings of signs within a measure show immediately that the notes are sixteenths and not several whole notes. The same symbols are used for thirty-seconds and halves, for sixty-fourths and quarters, for one hundred twenty-eighths and eighths. Confusion is impossible because of the number of note values in a single measure and their grouping by indication of the value of only the first note of the group or by special group signs (in eighths and one hundred twenty-eighths as well as irregular measures—up-beats). (Group sign: 126.2.).

The same applies to rest symbols, which are selected from the first symbols of groups B and C.

The form of the bar-line is blank (that is, a space without any points). Variations occur in the English "bar by bar" notation, which I shall discuss later.

Pitch is indicated by so-called octave signs—a kind of uniform clef—which, one after the other, place the signs of group G in front of the note concerned. They permit the indication of seven octaves, or, by doubling, of nine octaves. Such a clef is not, however, given to every note, but only to notes spaced more than a fifth apart (on changing to another octave more than a third

apart). The clef signs of notation for the sighted are not, as a rule, reproduced. Definite combinations of signs, however, make it possible to represent them accurately; this is necessary when books of instruction (collections, et cetera) are used by a blind music teacher to instruct sighted pupils.

If necessary, point 3 of the system of notation for the blind is placed as a point indicating prolongation after the tone symbols; in front of them are placed the signs from groups E, et cetera, to indicate triplets, sextuplets, quintuplets, et cetera, and to indicate irregular groups. There are two kinds of triplet signs, a small and a large; the large one is used when subdivisions in triplet form occur within a large triplet. (The small triplet sign is taken from group E without addition).

I have already stated that the notation of intervals and chords distinguishes Braille's musical notation for the blind from the mensural musical notation of the sighted.

Chords which are formed by notes of equal duration start with the highest tone if they are played on the violin, the viola, or by the right hand on keyboard instruments⁽¹⁾, or in a general way when they form the upper part of any harmonic ensemble. The same chords begin with the lower tone if they are played by the left hand on keyboard instruments, on the organ pedal, on the violoncello or contra-bass viol, or if they represent the bass part of a vocal passage of music, et cetera.

Only the first note of a chord is written with its symbol; all other tones of the chord are relatively indicated by an interval sign, whether running downward or running upward. Such interval signs (from the groups E and F) exist for seconds, thirds, fourths, fifths, sixths, sevenths, and octaves. If a chord consists of intervals exceeding the range of an octave (ninth, tenth, et cetera,) the intervals are represented by the signs for the seconds, the thirds, et cetera, and if necessary are given the octave sign corresponding to their sound.

A method of abbreviation, likewise peculiar to the Braille

⁽¹⁾ Translator's Note—This does not correspond to music embossed in Louisville, Ky., and at the N.Y.I.E.B., both left and right hand start with the lowest note.

musical notation for the blind, permits representing a whole series of relatively equal intervals in such a way that the corresponding interval sign is placed twice after the first notes of the melody or of the bass, but once after the last notes, while the tones in between appear only as a sequence of the melody or of the bass.

(An analogous method of abbreviation is used for triplets, sextuplets or other grouping signs, portamento, signs of accentuation or directions for interpretation, et cetera, when they occur in succession more than three times).

In vocal passages, in harmony, for instance, the prime is also indicated, but it is added to the fundamental tone by means of the interval sign of the octave, in front of which is placed that octave clef which corresponds to the consonance with the principal note. The octave sign may likewise be used to show where the voices cross.

In some countries, chiefly in England, it is consequently decided not to make the chords run downward. The writing down of every musical text is started with the lowest note and the right hand is forced to follow the left immediately with series of chords running upward.

Voices heard at the same time but having unequal note values are written one after another for whole bars or parts of bars and are connected by in-accord signs. Such whole-measure in-accord signs govern complete bars (in-accord signs) and incomplete bars (part-measure in-accord signs). In the latter case the bar is divided up into corresponding parts by a section-mark. If necessary, single voices are supplemented by adding rests.—Bars whose transcription in one line is impossible are divided up at the end of the line by means of the music-hyphen (point 5).

Moreover, one may also use the interval signs for a figured-bass notation, but so far this has not found much practical application, since—as expressly admitted by the Paris “Notation”,—misunderstandings and confusion may not be avoided in certain cases.

The Paris conference of 1929 created special new signs for double notes in harmony which occur upon the same tone (in printing for the sighted, these notes extend upward and down-

ward and have different values). In point notation the shorter notes are written here with their true value, and how long the tone is to be held is indicated by two symbols from groups G and A, and others placed after them.

In front of the notes in question stand the accidentals,—which have borrowed the symbols of group D.—In order to show the tonality of a piece, the key-signature is not written at the beginning of each line but is written only once at the beginning of the piece and repeated in the case of a change of key. When there are more than three sharps or flats, the key is shown by numerals, a method which is also customary when there are more than three rests, simile signs (see below), et cetera. They immediately precede the fractions or the common time ($4/4$ or $2/2$) giving the key and immediately follow the tempo-mark of the whole piece (andante or similar marks).

Slurs are represented by point 14 of the system and are modified by adding other symbols or, when they last longer, are doubled (see above). This gives rise to symbols for overlapping slurs, for ties, for chord-ties, and ties for arpeggi to be held. There are likewise double symbols for long slurs, which, however, have until now been used only in recent English printings and in Schwetzingen printings (Macpherson's edition of the "Collected Beethoven Sonatas for the Pianoforte," Joseph Williams, London; printed in point notation for the National Institute for the Blind, London, catalogue number 10, 864).

The various marks relating to articulation and accentuation are developed from symbol 236 of group E, which by itself means staccato. By placing signs from group G in front of this staccato mark, we have the signs for portamento, staccatissimo, martellato, sforzando, et cetera. The portamento-staccato is indicated by combining the signs for staccato and slur; vibrato is indicated by the further combination of two signs from groups D and F.

With the exception of portamento-staccato, these symbols stand in front of the notes to which they belong. They can be abbreviated in the above mentioned way when they appear without interruption.

The fingering, on the contrary, always follows the notes to

which it belongs. A special combination of signs is used for applying the thumb to stringed instruments; in the organ pedal, fingering is replaced by directions for applying the toe and the heel.

A special method is used to represent broken notes and chords (tremolo). This method is connected with the customs of printing for the sighted. The values of the notes are written out in full, but the cross-beams of notes for the sighted are replaced by special combinations in point notation.

The use of point notation also resembles printing for the sighted as regards the printing of metronome marks, which are appended to the tempo-marks, such as *andante espressivo*. Quarter notes (c as quarter note) = 60 Four sharps Three-quarter time.

The indications for movement and expression within the musical text stand in front of the notes governed by them. They are rendered perceptible by a "word symbol" (345) placed in front, whose function it is to prevent any confusion of letters and notes. The resumption of the music notation is indicated by inserting an octave sign. Also, the symbols for movement and expression are just like the symbols of printing for the sighted, with the exception of the crescendo sign and diminuendo sign, which are indicated merely by c and d (rendered perceptible by the word sign), while the end of these signs is represented by the same letters in the lower forms of the line of writing (group E).

Likewise, the signs for cadenzas, grace notes, and so on always precede the tone symbols to which they belong.

One of the chief differences between the Braille musical notation for the blind and the musical notation for the sighted lies in the frequent use of repetitions and abbreviations in point notation. So long as their being complicated does not endanger deciphering, their judicious use in Braille notation is required, for they make possible, *inter alia*, a great saving of space and shorten the time of reading, provide a means of notation, and facilitate memorizing.

Such abbreviations consist in the repetition of parts of bars and whole bars by the simile sign (likewise unknown in the earlier printing for the sighted), of whole bars and groups of bars by

numerals which tell how many bars are to be counted back and then played over, by inserted segni (in printing for the sighted, not present at the places concerned), and lastly, in representations with bar counting, by numbering the bars to be repeated. Likewise, when the repetitions are to be made from the beginning, a "da capo" sign may be used wherever it is not written in ink-print.

Since the Braille notation for the blind employs points but no lines, the eight double bars, the double bars at the end, and the signs of repetition are transcribed by means of special combinations of points or of signs. It is also possible to mark the change of the performing members within the composition for the right hand, left hand, or organ pedal.

Fermatta, breath-marks, et cetera, follow the note to which they belong, and variants follow the bars to which the changed reading refers.

A further abbreviation is possible by indicating melodic progressions and parallel passages in octaves, thirds, sixths, et cetera. This possibility of notation is, however, but rarely used.

The older musical notation for the blind (after the Cologne decisions) likewise offers a method for the special representation of passages in equal note values.

The Braille system of musical notation is supplemented by some special signs for use in transcriptions for the pianoforte, for the organ, for stringed instruments, and for the voice.

Even this very brief account shows the complicated nature of this musical notation; but at the same time it is plain that all requirements can be met. Proof of these two sides of the Braille system is furnished on comparing the following lists, in which the signs and directions which may precede or follow a note are placed in juxtaposition:⁽¹⁾

A (in front of the note)

1. Clef signs used in printing for the sighted (in schools, et cetera).
2. Pedal signs for the pianoforte—string or position in stringed instruments.

⁽¹⁾ Borrowed from "Notation musicale Braille."

3. Dynamics (*forte*, *mezzoforte*, *piano*, et cetera).
4. Signs for the performing member (right hand, left hand, organ pedal), in case that the entire section is not planned for one of these organs. Instruction as to bowing in the case of stringed instruments.
5. Beginning of a phrase-mark.
6. Triplet signs or other group signs.
7. Symbol for arpeggio.
8. Signs for articulation or accentuation (*staccato*, et cetera).
9. Trill signs or other ornaments.
10. Accidentals.
11. Octave sign.

B (following the note)

1. Point of prolongation.
2. Fingering signs for open strings or flageolet.
3. Tremolo.
4. Possible end of a phrase-mark,—tie.
5. Grouping comma (breath-mark); fermata.
6. Sign for releasing the pianoforte pedal.

It would be carrying things too far to complete this account by repeating all possibilities that can arise from the presence of additional signs (passage signs, interval signs, in-accord signs, part-bar signs, et cetera).

Let us turn instead to the problems created by a musical notation for the blind and especially by Braille's musical notation.

Since I have not yet discussed these problems of musical notation for the blind incidental to tracing the development or alluded to them in describing the features of the Braille musical notation, the questions may be stated as follows:

1. Is a musical notation necessary for the education and employment of the musical blind?

As we have learned from the explanations given by Simon Sechter in J. W. Klein's "*Lehrbuch zum Unterrichte der Blinden*" (1819),⁽¹⁾ the famous theorist believes it better "to express the

⁽¹⁾ See text and footnote on p. 8 of text.

rules of music so clearly and precisely in words that no notes are needed to make them intelligible." We have further seen that even today there are still blind musicians who either do not possess a notation for the blind (Japan, among others) or voluntarily decline its help in their profession.

Here it is problematical whether the memory can preserve the musical impressions heard so unchanged that they may be recalled again at will and on demand. Here, therefore, we are concerned with "memory" alone and deliberately omit involuntary "recollection," just as here we may not refer to the need of the creative musical power of imagination, which indeed can make use of musical notation for the blind to retain its own creations, but does not find it absolutely necessary—as instances cited from history show—in order to be manifested.

As experience shows, the question as to whether the memory of a musically inclined blind person needs a notation can be answered neither by an unconditional affirmative nor by an absolute negative. Sechter was obsessed by the ideas regarding the blind which had prevailed during the centuries before Valentin Haüy. He was led to reject musical notation for the blind because he knew only the attempts made by teachers of the blind of those days to follow the path of making the musical notation of the sighted perceptible to the touch, which path had been made by J. Ph. Rameau. Here we see how, at that time, fundamental things—which for the sake of simplicity I intend to call "Sechter problem" and "Rameau problem"—are opposed. The "Braille problem" is later added to these problems.

The Sechter problem regards the blind person exclusively as a type of person depending wholly on hearing. But we can show that there are different types of memory among the blind. Here, too, we can not only distinguish between the types of a plastic and abstract memory, of a memory for names, of a memory for numbers, of a memory for words; but also, wherever we find a special memory for sounds, for tones, and for music, we have to distinguish between types which perceive, impress, and retain a musical composition preferably by ear directly, and types which do so preferably through a medium (in this case, notation) in-

directly. The types of blind persons whose memory depends on hearing will be able to dispense with all notation, and I have noted the existence of such types among the blind not only in the past but also today. But it is doubtful whether it seems advisable not to teach notation to such purely acoustic types, hence to deprive them of the orthography and consequently of a part of the train of thought of a composer, and further, to hold them up as a standard for the schooling of the blind person and his cultivatable memory.

The Sechter problem takes on new meaning today in connection with this doubt. Phonograph records and radio, "Litteraphon" and other kinds of reproduction involving the hearing alone are today more at the disposal of the blind person than persons who played aloud or read aloud were in earlier times. Hence it might well be argued that books for the blind might be discarded—thanks to the invention of the optophone, the visograph, et cetera, and to the exertions of the "Litteraphon" society⁽¹⁾,—while musical notation for the blind would be rendered superfluous by audible production of phonograph records and radio lessons, that is, by efforts like those made in school to teach music to the sighted as well, and by radios in schools.

But these purely audible productions can no more give a true musical education than radio and phonograph records can take the place of textbooks, dictionaries, et cetera. In this connection I may quote Sechter, who a whole century ago made the reservation that "the rules of music must be expressed clearly and precisely *in words*." The teaching of the blind person cannot consist in learning music by hearing and without books, but that it requires the use of books for learning, a conception of what the selection heard signifies and is trying to show.

Still less for the professional blind musician than for the blind person to be taught do phonograph records and (for example) the "Litteraphon" suffice to form his repertory and his technique and to be applied again for purposes of teaching, as

⁽¹⁾ See the publications of the "Beiträge zum Blindenbildungswesen," Marburg-Lahn, and the monthly magazine "Schweizer Blindenboten," Zürich.

well as for musical reference works. The only concession is that mechanically recorded music and its reproduction can be a valuable aid and a supplement for the blind person, and will increasingly become so. It becomes a possibility of learning to know a wider range of music independently of a sighted helper and of studying various aspects of it,—something which is not possible for him through the transcription of notation for the blind alone.

The Sechter problem assumes a special new form in the use of the movable-do system in schools for the blind, as introduced by G. Ismer into the State Institute for the Blind in Berlin-Steglitz. This method seems to have been imitated elsewhere, too (Switzerland, *inter alia*). But I should be exceeding the bounds of my task if, on this occasion, I went deeper into the problem of teaching of the blind without notation as well as of playing of music by the blind without notation. Let me stress only the fact that—with the exception of individual cases (purely acoustic types of memory)—notation as a vehicle for memorizing and acquiring a repertory on the part of the blind is just as important as notation for the sighted is to musical performers who can see, although this saves the latter the necessity of memorizing, a thing impossible for the blind person—with the exception of notes to be sung, which he can read from the sheet.

2. But, as soon as we must recognize the necessity or else the advantage of a notation for blind persons living and working in the company of other human beings with all five senses, there at once arises the Rameau problem with the following question. Does not the notation of the sighted when rendered perceptible to touch (the same applies to musical notation) exemplify the simplest and the most adequate possibility of a notation for the blind?⁽¹⁾

I have previously pointed out the difficulties which the printing of raised musical signs would entail for publishers of printed works for the blind. But these difficulties would surely have to be overcome if it were proven that J. Ph. Rameau, among others,

⁽¹⁾ See text and footnote on p. 21 of text.

had shown the blind the right way by proposing to represent the signs of musical notation in relief on five lines.

More important, therefore, is the rejection of the notation for the sighted in its application to the blind because it is unsuited as raised notation for being written independently by a blind person. Such writing would have to be mirror-writing and would involve far greater technical difficulties than the representation of mirror-writing of point-notation signs written by hand on a table in the Braille system. Even from this angle the Rameau problem could not fulfil the requirements which must be fulfilled by every kind of musical notation for the blind:

- a) it must be easy to read and without ambiguity;
- b) it must be suited to the purpose of memorizing;
- c) the blind themselves must be able to write it.

The Rameau problem could hardly satisfy this third requirement.

As regards the requirement of easily read and unambiguous notation, the suitability of the notation of the sighted rendered perceptible to touch must also be doubted in this connection. Both the letter notation and the musical notation of the sighted are the result of development involving the eye alone for many thousands of years—that is, which makes audible impressions visible in order to transmit them to one's own recollection or to the consciousness of others. It is therefore debatable whether it is possible to transfer a portrait directly to the sense of touch. The sense of sight has a wider field of action than all the other senses as regards variety. The sense of touch must be brought into direct contact with the object to be identified, while in the sense of sight the light-ether waves emanating from the illuminated object interpose between the organ of sense and the object to be identified. This indirect perception is, moreover, possessed by the sense of sight in common with the hearing, and it may almost be supposed that on this basis alone the eye is more suited to take the place of acoustic perceptions than is the sense of touch, which perceives by direct contact. But since it is the fate of the blind person to remain directed by his sense of touch, he will have to use things inappropriate for himself when he uses notation symbols which are

appropriate for sight; indeed, these are the most inappropriate things that exist for conveying specific meaning to the touch. His first desire will be for larger symbols of notation, since the small size of symbols—which suffices for the eye—appears to him unsuited for the sense of touch or sense of pressure in ordinary sizes of type.

The correlation between the sense of hearing and the sense of touch is due to the common possession of the sense of time by the touch and by the hearing. But, in comparison with the sense of sight, the power of perception of the sense of touch is not only distinctly different and cruder but is also cruder in practice. The range of touch shows that the smallest distance over which two points to be touched are perceived as still separate amounts to 1 mm. (the tip of the tongue). As regards the fingertips (where the reading are a likewise forms) which alone are involved in reading by blind persons, the distance amounts to 2 mm., so that smaller signs or parts of symbols used in printing for the sighted can no longer be distinguished unless they are enlarged. The smallest form of point notation for the blind (fine print) uses perceptible points whose centres are exactly 2 mm. apart. In spite of the fact that continued practice made it possible to increase the power of perception of the sense of space in feeling, this size of print has already been rejected by most blind persons as too fatiguing. But these boundaries do not exist for the eye, and therefore the blind person will likewise have to reject the simple transcription of notation for the sighted adapted for the sense of touch. The perfection of the sense of touch in learning will, on the contrary, prefer to all others those forms which correspond especially to the specific properties of pressure perception, and this form is not the line, the dash, or the round or angular form of a note, a rest, et cetera, but the point, which has been found and kept by notation for the blind after many searches in the course of its history. It guarantees the greatest certainty of reading and as well as facility of reading and therefore also overcomes the difficulties inherent in the Rameau problem, which does not even consider ease of learning.

3. It was therefore a logical stage of development that the

Rameau problem should be replaced by the Braille problem. But behind this new problem there arises the question: Is the Braille six-point system of notation for reading and for music for the blind the simplest solution of the problem of reading, a solution that on the whole cannot be bettered?

We must give an affirmative answer to this question on the basis of the following results of experience: The groping finger (the fingertips or reading area) can perceive at one time not more than 6 upright points. All attempts to amplify the six-point system into an eight-point system, et cetera, have therefore failed, and even the changing of the New York notation for the blind (see above) to a horizontal six-point tangible picture and the Moon notation for the blind (used in England side by side with the Braille system) using dots and dashes together have not been able to supplant the Braille system. Even the legitimate objection that the Braille system is too complicated because of the rigorous arrangement of its musical symbols, with the exception of scores, *only* one after the other has not militated against its use, since all other attempts (Leipzig system of musical notation, et cetera) which compel the finger to feel vertically *and* horizontally militate against ease of reading more than do all the difficulties of the manifold combinations required by the Braille system of musical notation, in order to represent all symbols of mensural musical notation.

Moreover, the point best meets the requirement which would have the blind person able not only to read his writing but also to write it himself.

The requirement of suitability for easy memorizing is hardly based on the sensory impression which the notation of the sighted offers when it has lost the character of a pure picture writing. To be sure, as regards the rise and fall of the melody, the mensural musical notation is rich in pictures, while musical notation for the blind gives no pictures and must be judged by its nature. But in notation for the sighted the ease of memorizing lies only to the smallest degree in the note-heads which rise and fall, while in point notation it lies rather in the composing of notation by musical orthography as well as by sections and repetitions. The

representation of notation for the sighted, which primarily serves not memorizing but playing at sight, by no means completely exhausts these possibilities of composition. We have shown, in the representation of point-notation symbols, how far the Braille musical notation for the blind makes use of different abbreviations and how it is far superior to mensural musical notation in this respect and from this angle. And yet there is one more difficulty in the Braille system, which I should not wish to pass over.

4. I have had many occasions to refer to the fact that the problem of the copying of collective ink-print symbols in Braille's point notation has seemed solved since the Paris congress of 1929. Another problem is: Is the use of these symbols so regulated that the best possible method of transcription for the use of the present symbols has been found?

As I have already stated, the Paris congress did not commit itself on this subject. It was much more concerned with establishing the following points:⁽¹⁾

The Braille musical notation does not exclude the score-like arrangement of printing for the sighted; but the musical text copied in this way (for choral voices, orchestral instruments, et cetera) takes up much more room and does not always correspond to the requirements of the sense of touch.

Apart from the score-like representation there are four more kinds of representation in the Braille system of musical notation. But none of them combines the advantages of all; rather, one is better suited to one kind, the others are better suited to other requirements of different pieces of music.

In most countries, up to the World War, the transcription into separate sections (in music for keyboard instruments, also for performing members) was in use. An adequate number of bars are written one after the other, first: To meet the demand for the need of easy memorizing. For this purpose these sections are kept short intentionally. They intelligently sectionalize the piece and serve to facilitate the process of learning by heart.

⁽¹⁾ See "Notation musicale Braille," l. c.

If transcription section by section—a transcription which forcibly separates the melody and the bass and to some degree transforms them into independent parts of a piece of music and of its meaning—met with no opposition up to the beginning of the twentieth century, it must be explained by the fact that the invention of the Braille musical notation for the blind took place at the close of the epoch of absolute, classical music. It then represented an absolute value, an axiom, in a way. But, with the change of human thought in the preceding century, the “section by section” method of representation was forced to occupy a relative and a *posteriori* place. The demand for other methods of transcription made its appearance and is connected with the onset of the relative manner of thinking of the twentieth century and with the lack of a uniform style reflecting the period at present. This relative attitude, looking into the past and into the future, desires different means of representing music—means which relate not only to the material sound of music and attempts to record it in notation, on phonograph records, in sound films, inter alia, but also to the transcription of visible musical notation into print that can be felt by the blind. Sometimes this printing for the blind uses one system of representation, sometimes it uses another, depending on whether it has to transcribe a musical composition in counterpoint or homophony, a romantic or modern composition, or whether a work for school is being copied, et cetera.

In England, for some twenty years the desire to have the related harmonic parts of a bar stand next to one another for all performing members simultaneously has led to two new kinds of representation, namely, “bar over bar” vertical transcription (now preferred in America), and “bar by bar” horizontal transcription.

Bar by bar transcription is in no way a score-like representation, since it permits the system of chord writing by interval signs for the individual performing members. It violates the above-mentioned principle of “only consecutive” of the Braille system of musical notation and therefore has few expectations of becoming widespread. The bar by bar method of representation, on the contrary, in many ways abides by this principle, even more than

does the "section by section" notation; it promotes "harmonic memorizing"—whereas the notation by sections prefers a purely technical memorizing—and ensures lasting value to the new English editions of recent times.⁽¹⁾ Bar by bar notation offers the possibility and consequently the advantage of dividing [a piece] into sections and also of the consecutive number of bars for the right hand and left hand, et cetera. This method is in turn valuable for the practice of repetition and consequently for ease of memorizing. (Right hand, left hand, and organ pedal are each separated by a space in this kind of notation, while the bar-line is indicated by three points [1 2 3] placed one above the other).

Lastly, "Notation musicale Braille" also describes the "Clavers method," in which a page of reading is horizontally divided in the middle; above the dividing line is the right-hand part of a piece of music, and below it is the left-hand part. The advantage of this is that the blind person, in teaching, does not have to memorize everything that he has a pupil play, but can follow the text for the right hand and left hand with each index finger simultaneously. In the Clavers method the uppermost sequence for the right hand corresponds to the lowest line for the left hand, so that the two reading fingers are moved toward each other, more or less. But since the notes of the Clavers method are harder to arrange than in the other methods of representation and since their distribution upon the page of reading rather increases the difficulty of memorizing than furthering it, it is of value only for works of instruction from which a blind person wishes to teach.

The problem of methods of transcription, therefore, does not yet seem to be completely solved. But it is not as important as the problem of symbols; hence, we have gained an exceedingly favorable outlook from the perusal of the history and the problems of a musical notation for the blind.

The Braille system of musical notation is internationally

⁽¹⁾ See the English edition of the Collected Beethoven Sonatas for the Pianoforte, Macpherson's Edition (Printed in Braille by kind permission of the Publishers: Messrs. Joseph Williams, Ltd., 32, Great Portland St., London, W.)—Method: Bar by Bar. Catalogue No. 10,864, National Institute for the Blind, London, W. 1.

recognized and established, the methods of printing it are technically perfected to the highest degree, and the publishing of works printed in musical notation—in Germany through the Music Supply Centre for the Blind, and through the works of the World Congress for the Welfare of the Blind—bids fair to become standardized. Moreover, Braille's musical notation for the blind fulfills all requirements which could be devised for a musical notation for the blind, namely, ease and sureness of reading, the possibility of being written by the blind themselves, and suitability for memorizing.

While I was concluding this work, there appeared as a publication of the Society for the Advancement of Education of the Blind, at Hannover-Kirchrode, the German edition of "Notation musicale Braille," printed for both sighted and blind, which was prepared by school-board member Brandstaeter and by Czychy, of Königsberg.⁽¹⁾

⁽¹⁾ International point-system of musical notation, in accordance with the decisions of the Paris meeting in April of 1929. German edition approved by the third German Session for the Welfare of the Blind at Nuremberg, in July of 1930. Published by the Society for the Advancement of Education of the Blind, Hannover-Kirchrode, 1931. (Print edition by Breitkopf and Härtel, Leipzig).

R

Reuss, Alexander

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